

1+1+1+...

Personal Perspective
on Women in Physics

1st Workshop on HET & Gender
CERN, 28 September 2018

Yossi Nir

Weizmann Institute of Science

Women in Physics – Why should we care?

Let me state the obvious:

Better Physics

- Talent
- Diversity

Better Academy

- Organizational performance

Better Society

- Fairness

Plan of talk



About myself

- Weizmann Institute
- Israel



Towards gender equality

- Actions taken by Weizmann Institute



From stories to insights

- Obtaining a personal perspective



1+1+1...

- My own activities

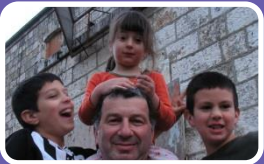
I, Weizmann, Israel

CV



Postdoc at SLAC

1988-1990



PI at Weizmann

1990-1994: tenure track

1994-present: professor



Member at IAS

1999-2000



Member of CERN's SPC

2016-present



Further positions at WI

2005-2006: Chairperson of the WI committee for promotions and appointments

2008-2015: Dean of physics

In the beginning...



The faculty of Physics at WI was established in 1954



Between 1954-2008 there has not been even one female physicist in the faculty



I joined the faculty in 1990; I was puzzled by the absence of female physicists in the faculty



I was even more disturbed by the fact that no one seemed to think that the faculty has a problem

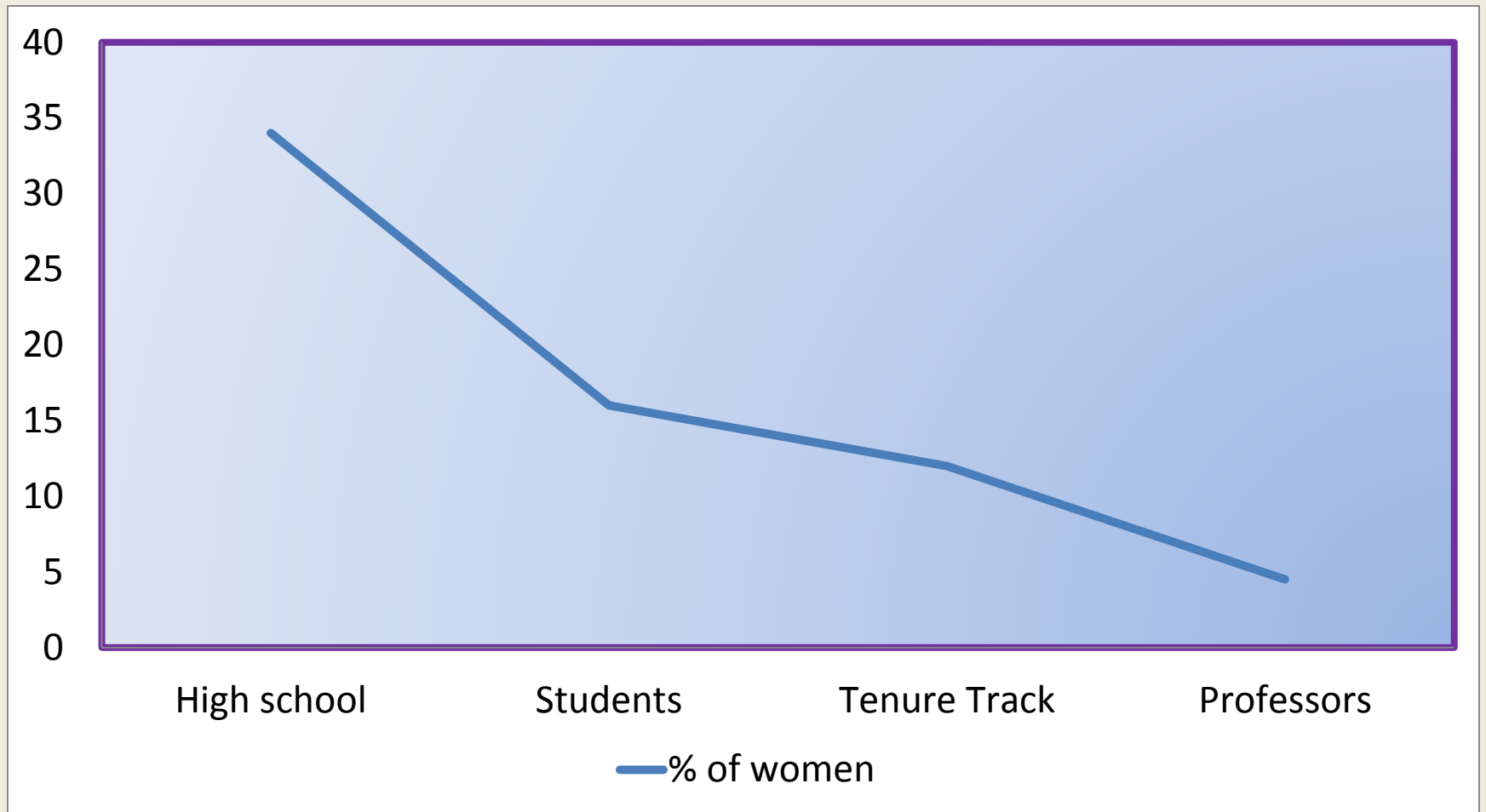
Physics at Weizmann Institute



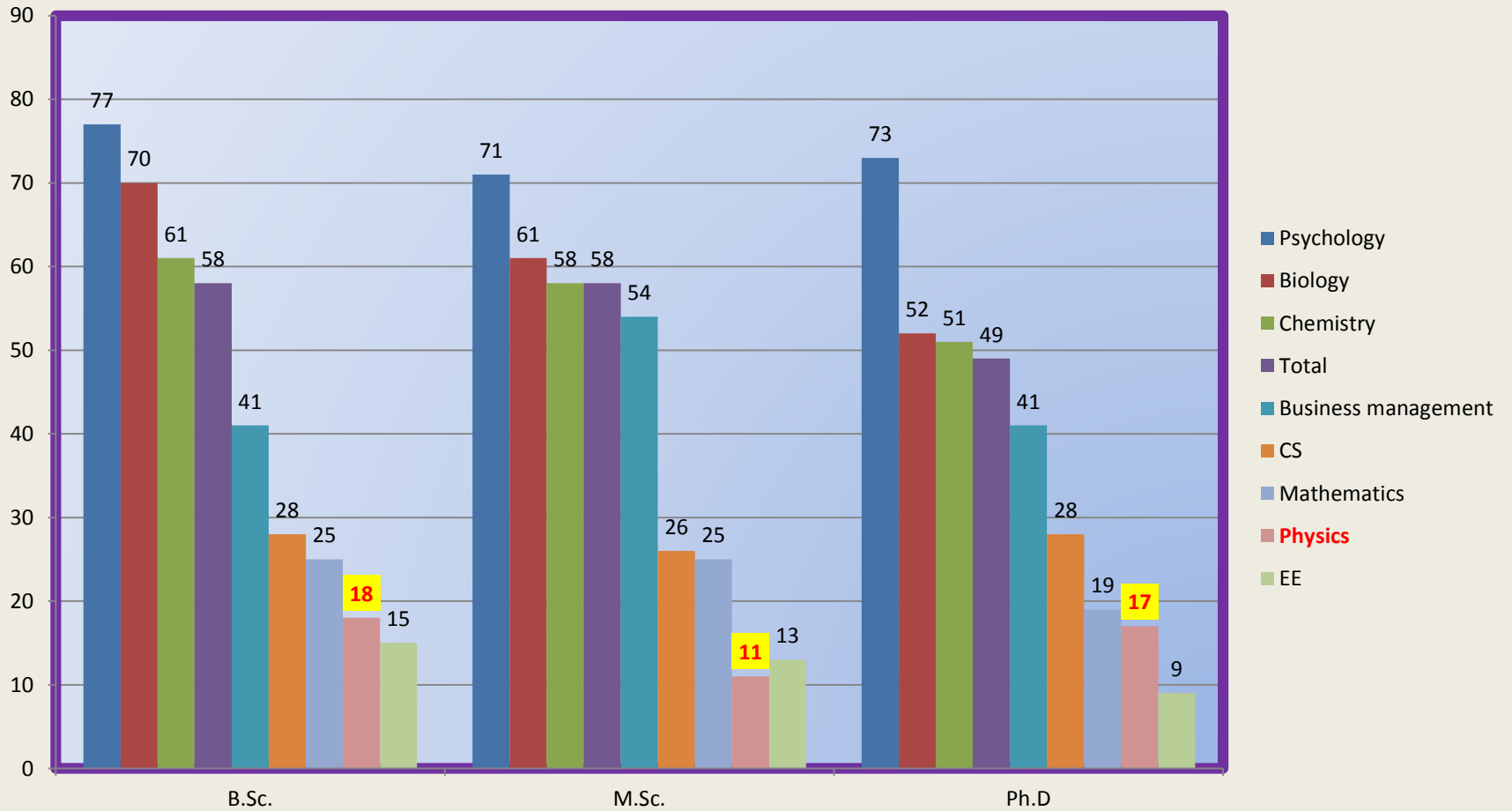
	Female	Male	% of women
Physics - Tenure Track	2	10	17%
Physics - Professor	1	34	3%
Physics - Total	3	44	6%
Weizmann - Total	42	223	16%

First 54 years of the faculty of physics:
Zero (0) female PI's

Physics in Israel



Academy in Israel



Actions at WI



Women at Weizmann

Faculty	# of PI's	Women	% of Women
Biology	60	14	23%
Biochemistry	53	11	21%
Chemistry	59	8	14%
Mathematics & CS	43	6	14%
Physics	50	3	6%
WI	265	42	16%

Encouraging post-doctoral training overseas

Post-doctoral research award for women in science

- For post-doc training abroad
- For combined post-doc training in Israel and abroad

Meetings of graduate students with returning scientists

- Some meetings include the spouses

Information on post-doc opportunities

Financial support for travelling

Empowering and encouraging graduate students

Young Female Leaders in Science Workshop

Managing motherhood and scientific research career

Graduate student forums

Mentoring program

Young mother support for traveling

Managing motherhood and scientific research career



Increased awareness of gender equality on campus

Unconscious bias training

Weizmann “Women and Science Prize”

International Women’s Day lecture

International Women's Day lecture



From stories to insights

Obtaining a personal perspective





Among my co-authors:

M.C. Gonzalez-Garcia, H.R. Quinn, M. Leurer, V. Ben-Hamo, A.E. Nelson,
F. Borzumati, M.H. Schune, G. Eyal, Y. Shadmi, G. Barenboim, S. Laplace,
T. Kashti, G. Hiller, S. Davidson, Y. Hochberg, S.T. French, M. Losada,
A. Efrati, A. Dery, C. Frugiuele, M. Shavit

A female physicist's CV

Citation summary results

	Citeable papers	Published only
Total number of papers analyzed:	<u>172</u>	<u>85</u>
Total number of citations:	37,275	34,353
Average citations per paper:	216.7	404.2
Breakdown of papers by citations:		
Renowned papers (500+)	<u>10</u>	<u>9</u>
Famous papers (250-499)	<u>10</u>	<u>8</u>
Very well-known papers (100-249)	<u>14</u>	<u>10</u>
Well-known papers (50-99)	<u>25</u>	<u>21</u>
Known papers (10-49)	<u>66</u>	<u>25</u>
Less known papers (1-9)	<u>37</u>	<u>10</u>
Unknown papers (0)	<u>10</u>	<u>2</u>
h_{scop} index [?]	57	49

- Professorship at the age of 60
- 36 years after completion of PhD
- 7 years before retirement

- Largest total number of citations
- Three most cited papers
- ...

A Committee Tokenism

International Advisory Committee:

Sonia Bacca (JGU Mainz)
Anna Ceresole (INFN Turin)
Valentina Forini (HU Berlin)
Rohini M. Godbole (Indian Institute of Science,
Bangalore)
Pilar Hernández (Valencia University, IFIC)
Maria Lledo (Valencia University, IFIC)
Prado Martin Moruno (Madrid University)
Yosef Nir (Weizmann Institute)
Michela Petrini (Paris, LPTHE)
Laura Reina (Florida State University)
Geraldine Servant (Universität Hamburg)

1ST WORKSHOP
ON HIGH ENERGY THEORY AND GENDER
26-28 SEPTEMBER 2018 CERN

<https://indico.cern.ch/e/genderHET>

International Advisory Committee:
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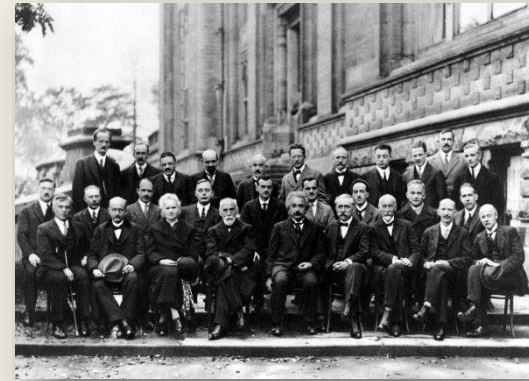
Organising Committee:
Gian Giudice (CERN)
Alessandra Grech (CERN)
Mariana Graña (CERN)
Gabriella Honecker (JGU Mainz)
Yolanda Luque (University of Oxford)
Silvia Pasuti (University of Milano Bicocca)
Gauri Salunke (CERN)
Marika Taylor (University of Southampton)
Andreas Thamm (CERN)
Magdalena Worek (RWTH Aachen University)

erc PRISMA INFN
IFICCA COST CERN

Schools, Workshops, Conferences

Role models

- Students
- Lecturers
- Social activities



1994 EUROPEAN SCHOOL OF HIGH ENERGY PHYSICS

Formerly CERN-JINR School of Physics
Sponsored by CERN-JINR, INFN, Univ. of Naples
SORRENTO - S. AGNELLO, Italy
29 August - 11 September 1994

The programme will include the following lecture courses:

Field Theory	A. Cohen (SLAC/CERN)
Standard Model	R. Barbieri (Pisa)
Beyond the Standard Model	G. Ross (Oxford)
QCD	A. Pich (Valencia/CERN)
CP violation and Θ -factories	R. Petronzo (Rome)
Cosmology and astrophysics	A. De Rijck (CERN)
Detection of gravitational waves	M. Casella (Trento)
Results from colliders	G. Wolf (DESY)
Physics at Gran Sasso	P. Monacelli (Gran Sasso Lab.)

Discussion leaders will include:

G. Bellettini (Pisa), V. Berezhinsky (Gran Sasso Lab.), N. Ellis (CERN), B. Gavela (CERN), G. Giacomelli (Bologna), D. Kazakov (JINR), L. Mirani (Rome), M. Neubert (SLAC/CERN), M. Testa (Rome)

Organizing Committee:

G. Alnerov (JINR), T. F. Donkova (JINR, Organizing Secretary), N. Ellis (CERN), B. Gavela (CERN), D. Kazakov (JINR), E. Lillostol (CERN), L. Mirani (Rome), I. Manneli (Pisa), M. Napolitano (Naples), A. Pallua (Milan), A. N. Sissakian (JINR), P. Strolin (Naples), S. M. Tracy (CERN, Organizing Secretary).

Applications are invited from young experimental high-energy physicists. For further information, please contact by e-mail, Telex, Telephone or Telefax:

Mia S. M. Tracy
European School of Physics
CERN/EA, CH 1211 GENEVE 23 SWITZERLAND
tracy@cern.ch

Max T. F. Donkova
Joint Institute for Nuclear Research, Int. Dep.
CH-14100 Dubna, RUSSIA
donkova@cern.ch

DEPARTMENT OF PHYSICS & ASTRONOMY OF THE UNIVERSITY OF SOUTHERN CALIFORNIA

STRINGS '95

FOURTH INTERNATIONAL SYMPOSIUM ON STRING THEORY

MARCH 13-18, 1995

TOPICS
Duality, Phenomenology, Quantum Gravity, Strings in Curved Backgrounds, Topological and Supersymmetric Field Theories, QCD Strings, Mirror Symmetry, W-Algebras

INVITED SPEAKERS INCLUDE:

H. De Vega	ADDRESS
R. Dijkgraaf	String '95
A. Sen	Department of Physics and Astronomy
E. P. Verlinde	University of Southern California
S. Gukov	Los Angeles, CA 90089-0840
A. Green	
R. C. Myers	
A. Hanany	
L. Susskind	
B. Zwiebach	
C. Vasilakaki	
M. Lüscher	
D. Ruelle	
H. Ooguri	
R. Minasian	
P. S. Aspinwall	
C. Vafa	
L. Susskind	
M. Bershadsky	
A. Sen	
A. Strominger	
L. Susskind	
A. Hanany	
R. van Biezen	
H. Verlinde	
S. Weinberg	
G. Zambon	
R. Zundorf	

WORLD WIDE WEB ADDRESS
<http://ccsc.ucsb.edu/string95/strings.html>

REGISTRATION DEADLINE
January 21, 1995

Prospects in Theoretical Physics

The Standard Model and Beyond

An intensive summer program for graduate students and postdoctoral fellows
July 16-27, 2007

Organizers and Lecturers:
Nima Arkani-Hamed, Michael Dine, Stephen Ellis, Igor Klebanov, Paul Langacker, Markus Luty, Juan Maldacena, Aneshi Manohar, Konstantin Matchev, Chiara Nappi, Josef Nir, Michael Peskin, Nathan Seiberg, Scott Thomas, and Edward Witten

Completed applications are due March 1, 2007.

Prospectus in Theoretical Physics
Institute for Advanced Study, Einstein Drive, Princeton, New Jersey 08540
Email: pipt@ias.edu Website: <http://www.ias.edu/pipt>

Program support provided by The ConocoPhillips Foundation

INSTITUTE FOR ADVANCED STUDY



Schools, Workshops, Conferences

Role models

- Students
- Lecturers



The Victor Rothschild Memorial Symposia

Particle Physics in the Age of the LHC

The 26th Winter School in Theoretical Physics
General Director: David Gross

Directors:
David Gross and Eleazer Rabinovici

Scientific Committee: Shmuel Elitzur, Amit Givon and Barak Kol

Dec. 29, 2008 - Jan. 8, 2009

Speakers
 Fabiola Gianotti / CERN
 Nima Arkani Hamed / IAS, Princeton
 Juan Maldacena / IAS, Princeton
 Michaelangelo L. Mangano / CERN
 Yossi Nir / Weizmann Institute
 George Raffelt / Max Planck Institute, Munich
 Nathan Seiberg / IAS, Princeton
 Scott Thomas / Rutgers University

The School is geared toward advanced graduate students and postdoctoral fellows from all over the world. Registration fee: \$250, \$200 MS for Israeli students. Hotel accommodation fee: \$480. Financial support is available and will be granted based on requests made during registration. Applications should be made online via the web site at www.nsl.ac.il/winter-schools/phys26/. Application deadline: December 1, 2008.

Hosted at the request of an LHC representative committee member (copyright courtesy of CERN)



AEP-SHEP 2018

12 - 25 SEPTEMBER 2018, QUIT KHON, VIETNAM



Scientific Programs

Neutrino Physics
 S. Bilenca (CERN)
Physical Statistics for Particle Physicists
 P. Stone (Princeton)

Field Theory and the SM Standard Model
 A. Cotler (MIT) & Boston
Physics Beyond Colliders
 M. Doser (CERN)

High Physics and Beyond
 Springer (Singapore)

Nuclear Spectroscopy
 F. K. Guo (ITP)

Microscopical and Detectors
 A. Hahn (JGU)

Future of Accelerator Based Experiments
 S. Horiuchi (JHU)

Cosmology and Dark Matter
 M. Markechch (IAS)

Neutrino Physics
 M. Tanimoto (NICTP)

Flavor Physics and CP Violation
 Y. Teramoto (ITP)

CEO:
 G. Sussler (CERN)

LHC Results, Highlights and Perspectives
 M. Taniguchi

Round Table Discussions
 T. Garrow (CERN), F. Logachev (SPH), M. Yamamoto (JGU)

Discussion Leaders
 A. Arbuzov (JINR)
 A. Brunschweiler (CERN)
 D. H. Green (MIT)
 H. Hagedorn (MIT)
 D. Shao (CERN)
 L.-C. Wang (MIT)

Coordinators
 H. Hagedorn (MIT)

Local Organizing Committee
 H. Hagedorn (MIT), S. Horiuchi (JHU), S. Kim (KAIST), H. Kim (KAIST), H. Kim (KAIST), H. Kim (KAIST)

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 A. Hahn (JGU), S. Horiuchi (JHU), S. Kim (KAIST), H. Kim (KAIST), H. Kim (KAIST), H. Kim (KAIST)

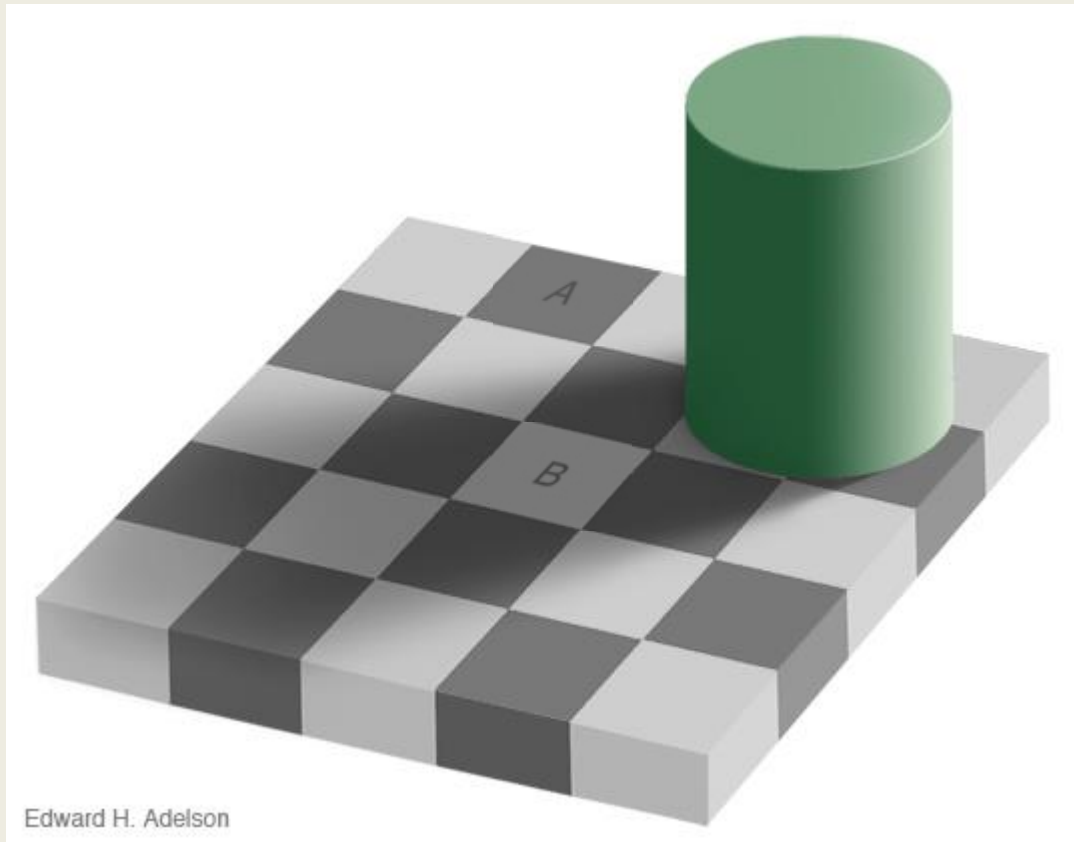
The Four Asian Pacific Schools of High Energy Physics
 For details and application, visit www.aep-shep.org

The technician at the lab Chilly climate



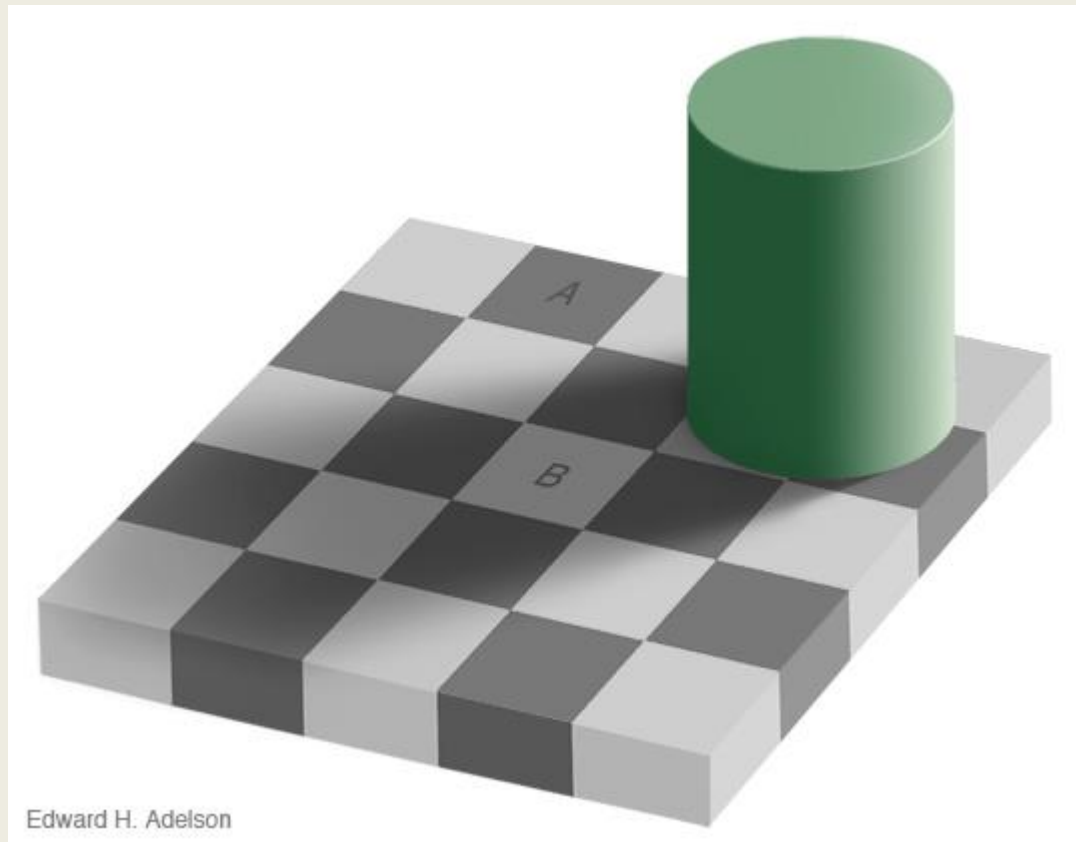
The man who was there

Unconscious bias



The man who was there

Unconscious bias



The two candidates

Unconscious bias

- Hard working
- Highly motivated
- Compassionate
- Helpful to peers
- Very dependable
- Insatiable

- Accomplished
- Insightful
- Excellent
- Independent
- Skilled
- Ambitious

The two candidates

Unconscious bias

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My personal perspective

(This was just a small sample of the stories)

There **is** a gender problem in physics in the academy

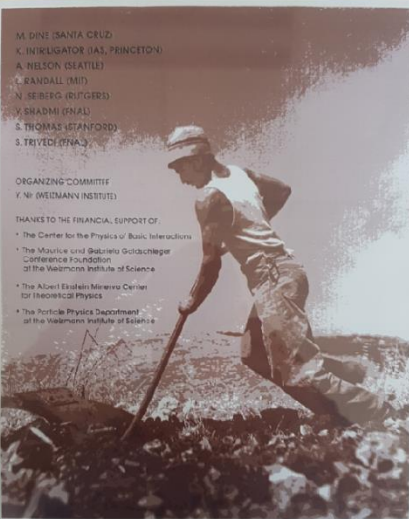
- (Unconscious) bias, chilly climate, micro-aggressions, double burden...

Can **I** do something?

- Next part

1+1+1+...

My activities



M. DINE (SANTA CRUZ)
K. INKILGATOR (IAS, PRINCETON)
A. NIELSEN (SEATTLE)
L. RANDALL (MIT)
N. SEIBERG (BUTGERS)
Y. SHADMI (ONAL)
& THOMAS (STANFORD)
& TRIVEDI (TNAU)

ORGANIZING COMMITTEE
Y. NIF (WEIZMANN INSTITUTE)

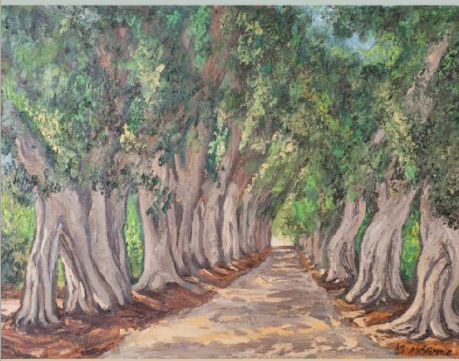
THANKS TO THE FINANCIAL SUPPORT OF

- The Center for the Physics of Basic Interactions
- The Maurice and Gabriela Goldschleger Conference Foundation of the Weizmann Institute of Science
- The Albert Einstein Minerva Center for Theoretical Physics
- The Particle Physics Department of the Weizmann Institute of Science

RESEARCH WORKSHOP OF THE ISRAEL SCIENCE FOUNDATION ON DYNAMICAL SUPERSYMMETRY BREAKING

DEPARTMENT OF PARTICLE PHYSICS
THE WEIZMANN INSTITUTE OF SCIENCE

APRIL 13-20, 1997



מכון ויצמן למדע
WEIZMANN INSTITUTE OF SCIENCE

Electroweak Baryogenesis in the Era of the LHC

Department of Particle Physics and Astrophysics | May 1-8, 2011

Organizing committee:
K. Blum | C. Delaunay | Y. Nir | G. Perez

Program committee:
M. Carena | M. Losada | Y. Nir | A. Flotto

Financial support:

- Denzavio Center for Astrophysics
- Center for Experimental Physics
- Department of Particle Physics and Astrophysics
- Priority of Physics
- Grant from Mr. Merim Kuahner Schneur
- Grant in memory of Richard Goldstein
- The Albert Einstein Minerva Center for Theoretical Physics
- The Maurice and Gabriela Goldschleger Conference Foundation



Voyages Beyond the SM II

Raiatea

23 February – 2 March 2018

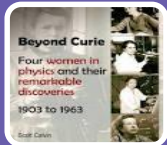
Speakers:
Ezequiel Alvarez
Kfir Blum
Raffaele Tito D'Agnolo
Beate Heinemann
Jernej Kamenik
Gaia Lanfranchi
Yossi Nir
Lisa Randall

Reading



A Singularly Unfeminine Profession

Mary K. Gaillard



Beyond Curie

Scott Calvin



What Works: Gender equality by design

Iris Bohnet



The Mathematics of Sex

Stephen J. Ceci and Wendy M. Williams



Women Matter

McKinsey & Company

Speaking up

READERS' FORUM

Commentary

Diversity in physics: Are you part of the problem?

Many leading academic physics departments have no underrepresented-minority faculty members. My own department at the University of Washington has never had an African American tenure-track faculty member. That state of affairs is taken for granted, but it should be regarded as shameful.

At Stanford University in the late 1980s, I was the first tenure-track woman hired in physics; the applied physics department and SLAC still had none. Yet my appointment (granted to increase diversity in the physics department) immediately made the percentage of female physics faculty at Stanford well above the national average. At that time, having no women in a physics department was viewed as normal.

I often get asked, "Why are there so few women in physics?" That anyone would ask that question shows how oblivious many people are to the sexism and bias that permeate our society and physics culture.¹ I may not be able to fully answer the question, but I can tell you why there are women like me in physics. Because we love math and nature. Because we like doing computations and figuring things out, step by



ALL OF US. Watercolor and pencil on paper (2000). Warren W. Buck, University of Washington, Bothell.

Data Base

Data base on all Israeli physicist female postdocs

- Contact details
- CV
- List of publications

Personal communication with each, every half a year

- Asking what is new
- Updates on CV and LoP
- Plans to visit Israel?

Goals of data base

We must not miss a worthy female candidate

We show that we care

We advice (mentorship)

In some cases, we help (sponsorship)

Attach to WI (getting an edge when competing with other institutes)

Invite to WI when visiting Israel

Help with travel expenses when visiting Israel

Global Data Base?

Can the idea be extended to a global scale?

I would like to have your feedback on this

Research

“Women in Physics: why so few?”

In collaboration with Meytal Eran-Jona, a sociologist and gender-expert

Funded, first, by WI and, later, by the IMoS

Emphasis on the Israeli context

- but hopefully also some “universal” insights

Focus on

- Deciding to go or not to go for a postdoc
- Competing for a tenure track position

Research plan

Literature survey

Data collection

Interviews

- Female PhD students from all six universities
- **Female postdocs**
- All female PI's
- All university president's advisors for gender
- PI's, deans

Surveys

- All physics PhD students
- HR managers in organizations employing physicists

Learning from successes

Research goals

Understand the personal perspective

- Professional
- Financial
- Family-wise

Understand the landscape

- Person
- Organization
- Labor market

Hopefully, make practical recommendations

$$1+1+1+\dots$$

1

+1

+1

+1

+...

Summary

There is gender imbalance in physics in the academy

We will benefit if we fix this situation

No silver bullet (a-la blind auditions for orchestras)

There are many possible avenues

Changes should be driven by organizations and individuals alike

You can contribute